REMARKS

This application has been carefully reviewed in light of the Office Action dated January 29, 2003. Claims 26, 27, 32, 33 and 35 have been amended. A marked-up version of these claims, showing changes made, is attached hereto as Appendix A. Claims 71 and 72 have been added to round out the scope of protection sought by the Applicant. Claims 26-35 and 71-72 are now pending. Applicant respectfully requests reconsideration of the above-referenced application in light of the amendments and following remarks.

Claims 32 and 35 are objected to as being dependent on canceled claims. Claims 32 and 35 have been amended to maintain proper dependency on a pending claim. Withdrawal of the objection is solicited.

Claims 27 and 33 stand rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Claims 27 and 33 have been amended to correct any perceived indefiniteness. Applicant respectfully requests that all § 112, second paragraph rejections be withdrawn.

Claims 26-31, 33 and 34 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Hamrah. Reconsideration is respectfully requested.

Applicant respectfully submits that Hamrah fails to anticipate the present invention. Hamrah teaches an etchant mixture for increasing the oxide etch rate while suppressing the polysilicon etch rate (Page 2, lines 33-34). Hamrah's etchant mixture includes a "hydrogen gas, balance inert carrier gas, ammonia and methane." (Page 3, lines 56-58). Hamrah teaches an etchant composition consisting of at least four different etchant gases. Hamrah's etchant mixture requires all four etchant gases to exhibit the increased oxide etch rate.

In contrast, Applicant's claimed composition is not directed toward increasing the etch rate. Applicant's claimed composition is directed to eliminating etch stop problems associated with forming contact holes. Hamrah's and Applicant's claimed etchant

mixtures contain different compositions. As a result, Applicant's have amended independent claim 26 to emphasize this difference. Claim 26 now recites "a gaseous mixture consisting essentially of at least one fluorocarbon and ammonia." (emphasis added). Hamrah teaches four different etchant gases and not Applicant's claimed two-etchant gaseous mixture.

Claims 27-31, 33 and 34 depend from and incorporate all of the limitations recited in independent claim 26. For at least the reasons given above with regard to claim 26, claims 27-31, 33 and 34 are similarly allowable along with claim 26.

Claim 31 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Hamrah in view of Becker. Reconsideration is respectfully requested.

For at least the reasons provided above, Hamrah does not teach or suggest the limitations of claim 26. In particular, Hamrah does not teach or suggest "a gaseous mixture consisting essentially of at least one fluorocarbon and ammonia," as recited in 26. Hamrah teaches an etchant composition of at least four etchant gases. Becker is relied upon for teaching an etchant composition consisting of CF_4, CHF_3 and CH_2F_2, and adds nothing to rectify the deficiencies associated with Hamrah.

The Applicant respectfully submits that there is no motivation to combine the references. Becker teaches a chemical etchant composition of CHF_3, CF_4, AR, and a CH_2F_2 additive material. The additive material is needed because "CH_2F_2 is added to offset the disasociation properties of nitride as compared to oxide." (Col. 2, lines 24-25) (emphasis added). Becker's etchant composition relies on the presence of a silicon nitride layer, e.g., an etch stop layer. (Col. 6, lines 16-20). In Hamrah, there is no silicon nitride layer. Accordingly, there is no motivation to employ a CH_2F_2 additive material to offset the disassociation properties of nitride.

Moreover, Becker teaches "using increased temperatures to achieve increased [etch] selectivity," and not the presence of additional etchant gases as Hamrah teaches

(Col. 2, lines 55-57). There is no motivation in Hamrah to use higher temperatures to achieve increased etch selectivity. Hamrah teaches that "higher NH_3 flow improves oxide etch rate, selectivity, RIE lag and profile angle," rather than higher temperatures (Page 8, lines 45-46). Still further, the combination of Hamrah and Becker would yield an etchant mixture comprising at least five separate etchant gases: hydrogen gas, balance inert carrier gas, ammonia, CH_2F_2 and methane. In contrast, Applicant claims an etchant mixture "consisting essentially of at least one fluorocarbon and ammonia," as recited in claim 26, e.g., a gaseous mixture consisting essentially of two etchants.

Still further, even if the references are properly combinable, one still would not obtain the invention as claimed in dependent claim 31, which incorporates all of the limitations found in independent claim 26. In particular, the cited references would still fail to teach or suggest a gaseous mixture consisting essentially of at least one fluorocarbon and ammonia, "wherein said fluorocarbon is a combination of CF_4, CHF_3 and CH_2F_2," as recited in claim 31.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

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Respectfully submitted,

By_____

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APPENDIX A

26. (amended) A composition suitable for use in etching an insulative layer formed over a substrate in a semiconductor device, said composition comprising:

a gaseous mixture consisting essentially of at least one fluorocarbon and ammonia.

27. (amended) The composition of claim 26, wherein said fluorocarbon is at least one member selected from the group consisting of [carbon tetrafluoride,] fluorohydrocarbons, chlorofluorocarbons and chlorofluorohydrocarbons.

32. (amended) The composition of claim [24] 26, wherein said composition does not remove side wall spacers of a gate stack which is also formed over said substrate.

33. (amended) The composition of claim 26, wherein [said composition is flowed into a reaction chamber containing said semiconductor device such that] the flow rate ratio of said fluorocarbon to said ammonia is not less than about 3:1.

35. (amended) The composition of claim [36] 34, wherein said flow rate ratio is within the range of about 4:1 to about 10:1.